

ATTORNEY DOCKET NO. SD-7173/S98785
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IN THE CLAIMS

Following are the current claims. For the claims that have NOT been amended in this response, any difference between the claims below and the current state of the claims is unintentional and in the nature of a typographical error:

1. (Currently Amended) A method of generating two-dimensional masks from a three-dimensional model comprising:
 - providing a three-dimensional model representing a micro-electro-mechanical structure for manufacture and a description of process mask requirements;
 - reducing the three-dimensional model to a topological description of unique cross sections;
 - selecting candidate masks from the unique cross sections and [the] a cross section topology; and
 - reconciling the candidate masks based on the description of process mask requirements [description] to produce two-dimensional process masks.
2. (Currently Amended) The method according to Claim 1 further comprising:
 - separating the three-dimensional model into at least one independent model [bodies] body.
3. (Currently Amended) The method according to Claim 2 further comprising:
 - searching the at least one independent [bodies] body for the unique cross sections;
 - and
 - arranging the unique cross sections based on mutual topological relationship.
4. (Currently Amended) The method according to Claim 2 further comprising:
 - reducing the at least one independent model [bodies] body to topology graphs including at least one node.
5. (Currently Amended) The method according to Claim 4 further comprising:
 - selecting the candidate masks based on structure of the topology graphs.

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6. (Currently Amended) The method according to Claim 4 further comprising:
analyzing the topology graphs comprising:
calculating area of a topology graph node;
categorizing the topology graph node relative to topological neighboring nodes; and
identifying masks according to predetermined heuristic rules.
7. (Original) The method according to Claim 1 further comprising:
summing the candidate masks; and
reconciling the summed candidate masks comprising:
performing selected operations based on process constraints, the selected operations being selected from among a group comprising: reordering, merging, and splitting the summed candidate masks.
8. (Original) The method according to Claim 7 wherein:
the process constraints are selected from among a group comprising number of layers, material type of a layer, thickness of a layer, mask type, and number of masks.
9. (Currently Amended) A method of generating two-dimensional masks from a three-dimensional model comprising:
disassembling the three-dimensional model into one or more independent bodies;
processing [the] individual of the one or more independent bodies comprising:
generating a topology tree composed of one or more nodes;
categorizing the one or more nodes of the topology tree; and
locating deposition boundaries to define one or more deposition domains;
processing [the] individual of the one or more deposition domains comprising:
locating candidate masks; and
saving the candidate masks in a candidate mask set; and
summing the candidate masks in the candidate mask set.

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10. (Original) The method according to Claim 9 further comprising:
providing the three-dimensional model that represents a micro-electro-mechanical structure for manufacture.
11. (Currently Amended) The method according to Claim 9 wherein:
processing [the] individual of the one or more independent bodies further comprises:
combining redundant nodes.
12. (Original) The method according to Claim 9 further comprising:
for a model that cannot be produced within constraints of a specified process or no particular process is specified, defining process steps that are capable of producing the model.
13. (Currently Amended) The method according to Claim 9 further comprising:
supplying [a] the three-dimensional model with a specific manufacturing process for production of [the] a device corresponding to [the] a model undefined; and
generating a process description for a manufacturing process capable of producing the device in combination with production of the two-dimensional masks.
14. (Original) The method according to Claim 9 further comprising:
reconciling the candidate masks in the candidate mask set with target process constraints.
15. (Original) The method according to Claim 14 wherein:
reconciling the candidate masks comprises inverting etching sense of a candidate mask to meet a target process constraint.
16. (Currently Amended) The method according to Claim 14 wherein:
reconciling the candidate masks comprises dividing candidate mask layers that are thicker than layers determined by [in] the target process constraints and placing a

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sacrificial oxide mask identical to the divided candidate mask between the divided candidate mask layers.

17. (Currently Amended) The method according to Claim 14 wherein:
reconciling the candidate masks comprises rearranging order of the candidate masks for a target process that [the rearrangement] an arrangement does not change result.
18. (Currently Amended) A method of generating two-dimensional masks from a three-dimensional model comprising:
analyzing cross sectional topology of a three-dimensional body;
generating a topology tree describing connectivity and relationships between cross sections, the topology tree including one or more nodes and branches connecting the one or more nodes;
processing [the] individual of the one or more nodes comprising:
calculating a cross sectional area of the individual of the one or more nodes [node]; and
categorizing the individual of the one or more nodes [node] relative to topological neighboring nodes;
processing [the] individual of the one or more branches comprising:
locating deposition boundaries to define one or more deposition domains;
and
processing individual deposition domain regions between the deposition boundaries comprising:
defining a mask set and deposition thickness.
19. (Currently Amended) The method according to Claim 18 further comprising:
identifying independent three-dimensional bodies in the three-dimensional model;
processing [the] individual of the independent three-dimensional bodies; and
summing the mask sets for the processed independent three-dimensional bodies.

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20. (Original) The method according to Claim 19 further comprising:
reconciling the mask sets with target mask process constraints.
21. (Currently Amended) The method according to Claim 19 further comprising:
joining redundant nodes of the processed individual of the one or more nodes.
22. (Currently Amended) An article of manufacture comprising:
a controller usable medium having a computable readable program code
embodied therein for generating two-dimensional masks from a three-dimensional model,
the computable readable program code further comprising:
a code capable of causing the controller to access information relating to a
three-dimensional model representing a micro-electro-mechanical structure for
manufacture and a description of process mask requirements;
a code capable of causing the controller to reduce the three-dimensional
model to a topological description of unique cross sections;
a code capable of causing the controller to select candidate masks from the
unique cross sections and [the] a cross section topology; and
a code capable of causing the controller to reconcile the candidate masks
based on the description of process mask requirements [description] to produce
two-dimensional process masks.
23. (Currently Amended) The article of manufacture according to Claim 22 further
comprising:
a code capable of causing the controller to separate the three-dimensional model
into at least one independent model [bodies] body;
a code capable of causing the controller to search the at least one independent
[bodies] body for unique cross sections; and
a code capable of causing the controller to arrange the cross sections based on
mutual topological relationship.
24. (Currently Amended) The article of manufacture according to Claim 22 further

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comprising:

a code capable of causing the controller to separate the three-dimensional model into at least one independent model [bodies] body;

a code capable of causing the controller to reduce the at least one independent model [bodies] body to topology graphs including at least one node; and

a code capable of causing the controller to select the candidate masks based on structure of the topology graphs.

25. (Currently Amended) The article of manufacture according to Claim 22 further comprising:

a code capable of causing the controller to separate the three-dimensional model into at least one independent model [bodies] body;

a code capable of causing the controller to reduce the at least one independent model [bodies] body to topology graphs including at least one node; and

a code capable of causing the controller to analyze the topology graphs comprising:

a code capable of causing the controller to calculate area of a topology graph node;

a code capable of causing the controller to categorize the topology graph node relative to topological neighboring nodes; and

a code capable of causing the controller to identify masks according to predetermined heuristic rules.

26. (Original) The article of manufacture according to Claim 22 further comprising:

a code capable of causing the controller to sum the candidate masks; and

a code capable of causing the controller to reconcile the summed candidate masks comprising:

a code capable of causing the controller to perform selected operations based on process constraints, the selected operations being selected from among a group comprising: reordering, merging, and splitting the summed candidate masks.

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27. (Currently Amended) An article of manufacture comprising:

a controller usable medium having a computable readable program code embodied therein for generating two-dimensional masks from a three-dimensional model that represents a micro-electro-mechanical structure for manufacture, the computable readable program code further comprising:

a code capable of causing the controller to disassemble the three-dimensional model into one or more independent bodies;

a code capable of causing the controller to process [the] individual of the one or more independent bodies comprising:

a code capable of causing the controller to generate a topology tree composed of one or more nodes;

a code capable of causing the controller to categorize the one or more nodes of the topology tree; and

a code capable of causing the controller to locate deposition boundaries to define one or more deposition domains;

a code capable of causing the controller to process [the] individual of the one or more deposition domains comprising:

a code capable of causing the controller to locate candidate masks;
and

a code capable of causing the controller to save masks in a candidate mask set; and

a code capable of causing the controller to sum the candidate masks in the candidate mask set.

28. (Currently Amended) The article of manufacture according to Claim 27 further comprising:

a code capable of causing the controller to combine redundant nodes in the code capable of causing the controller to process [the] individual of the one or more independent bodies.

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29. (Original) The article of manufacture according to Claim 27 further comprising:
a code capable of causing the controller to reconcile the candidate masks in the candidate mask set with target process constraints.

30. (Currently Amended) An article of manufacture comprising:
a controller usable medium having a computable readable program code embodied therein for generating two-dimensional masks from a three-dimensional model that represents a micro-electro-mechanical structure for manufacture, the computable readable program code further comprising:

a code capable of causing the controller to analyze cross sectional topology of a three-dimensional body;

a code capable of causing the controller to generate a topology tree describing connectivity and relationships between cross sections, the topology tree including one or more nodes and branches connecting the one or more nodes;

a code capable of causing the controller to process [the] individual of the one or more nodes comprising:

a code capable of causing the controller to calculate a cross sectional area of the individual of the one or more nodes [node]; and

a code capable of causing the controller to categorize the individual of the one or more nodes [node] relative to topological neighboring nodes;

a code capable of causing the controller to process [the] individual of the one or more branches comprising:

a code capable of causing the controller to locate deposition boundaries to define one or more deposition domains; and

a code capable of causing the controller to process individual deposition domain regions between the deposition boundaries comprising:

a code capable of causing the controller to define a mask set and deposition thickness.

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31. (Currently Amended) The article of manufacture according to Claim 30 further comprising:

a code capable of causing the controller to identify independent three-dimensional bodies in the three-dimensional model;

a code capable of causing the controller to process [the] individual of the independent three-dimensional bodies;

a code capable of causing the controller to sum the mask sets for the processed independent three-dimensional bodies;

a code capable of causing the controller to reconcile the mask sets with target mask process constraints; and

a code capable of causing the controller to join redundant nodes of the processed individual of the one or more nodes.

32. (Currently Amended) An apparatus for generating two-dimensional masks from a three-dimensional model comprising:

means for providing a three-dimensional model representing a micro-electro-mechanical structure for manufacture and a description of process mask requirements;

means for reducing the three-dimensional model to a topological description of unique cross sections;

means for selecting candidate masks from the unique cross sections and [the] a cross section topology; and

means for reconciling the candidate masks based on the description of process mask requirements [description] to produce two-dimensional process masks.